

Project Description
State Project 0147- 0063, F.A.P. No. 0049(017) (PE)
Replacement of Bridge No. 01012 Carrying Route 49
Over Pachaug River
in Voluntown

Location: This project involves Bridge No. 01012 which carries Route 49 over Pachaug River in Voluntown. The bridge is located approximately 0.6 miles North of Route 138.

Purpose and Need: Constructed in 1934, the existing structure is a simple span multi-girder structure. The superstructure consists of cast-in-place concrete tee-beams and a bituminous overlay. The span of the bridge is approximately 40' with a 29'- 9" curb to curb and 35'- 8" out to out deck width. The superstructure spans over concrete abutments. The average daily traffic (ADT) is approximately 2100 vehicles per day with 6 percent truck traffic (2020).

The most recent Routine Inspection Report (05/04/2022) assigned the deck a conditional rating of "5" indicating the deck is in fair condition. The existing tee-beams were assigned a conditional rating "5" indicating a fair condition. The existing substructure overall rating is a "5."

The inspection report noted the following concerns with the current condition of Bridge No. 01012 that need to be addressed:

- Concrete deck has isolated hairline cracks with scattered efflorescence adjacent to the beam webs.
- Bays #1 and #4 have hairline map cracking up to full bay width x 4' long.
- Bay #3 has localized hollow areas up to full bay width x 2.5' long.
Also contains spalls up to 2' long x 1' wide x 2" deep with and without exposed rebar. Furthermore, Bay #3 contains areas of honeycombing up to 2" long x 1" wide x 3" deep with and without exposed rebar. In addition, Bay #3 has isolated locations of exposed rebar with up to 30% section loss
- West overhang exhibits a 15' long x 2' wide x 1/2" scaling area.
- The reinforced concrete parapet has vertical hairline cracks up to full height and hairline map cracking at isolated locations.
- The East parapet exhibits has a spall at the curb line (4' long x 4" high x 1/2" deep).
- The Reinforced concrete tee-beams have isolated longitudinal cracks up to 1/16" wide and isolated hairline map cracks with scattered efflorescence.
- Beam #B4 web, west face, has hollow areas up to 5' long x 1-1/2' high.
Also, at east face near Abutment 1 has spalls (2' long x 6" high x 2-1/2" deep) with and without exposed rebars. The exposed rebars have up to 30% section loss.
- Beam #B1, on the west side of the web, has 3 concrete patches (5.5' long x 1' high).
- Beam #B1, at a failed concrete repair on the bottom flange, has spalls (21" long x 6" wide x 4" deep) with exposed rebar.
- The exposed rebar on the bottom flange of the tee-beams exhibits up to 20% section loss.
- Beam #B4 and #B5 have several longitudinal cracks open up to 1/4" wide and isolated hollow areas up to 6" wide on the bottom flange and extending 4" high on the vertical faces of the webs.

- Beam #5 bottom flange, starting from the interior diaphragm towards abutment, exhibits a hollow area on the west end (13' long x 1' wide).
Also Beam #B5 bottom flange near Abutment 1 has scaling area (2.5' long x 9" wide x 1" deep)
- Diaphragms have isolated hairline cracks with scattered efflorescence and few locations of concrete repairs.
Also, the diaphragms have hollow areas up to full width on the bottom and extends up to 1' high on the sides with spalls up to 2" deep with and without exposed rebar. The exposed rebars have up to 10% section loss.
- Abutment 1 has 5 pop-out spalls up to 3" diameter, vertical cracks (1.5' long x 1/16" wide), horizontal cracks (4' long x 1/16" wide). On Abutment 1, cold joint below the water surface exhibits a hairline gap 18' long. Also, Abutment 1 has a band of scale with loose aggregate 4.5' high x 1" deep starting 1.5' above the water surface.
- Abutment 2 has band of scale 5' high x 2" deep along the water surface. Abutment 2 has scale with punky concrete 25' long x 1.5' high x 4" deep. Also, the abutment 2 has isolated vertical hairline cracks up to 1' long with efflorescence.
- Reinforced Concrete wingwalls have scale up to 1" deep at and below the water surface. Wingwalls have areas of hairline to up 1/16" wide cracks and map cracking with and without efflorescence. Wingwall 1A has exhibits a spall (4' long x 2.5' high x 1.5" deep).

Due to the extent of the deterioration of the existing bridge and considering its age, Project 0147-0063 was initiated to replace the bridge.

Description: The exact project scope of work has yet to be determined. However, the preferred structure type to replace the existing structure is a fully integral abutment bridge. The existing natural stream bed material will be reused.

Maintenance and Protection of Traffic: There is one public school in the vicinity of the proposed project. The school along Route 138 is Voluntown Elementary School (1.2 mile). To minimize the construction impact to vehicular traffic, Bridge Design Unit is investigating closing the road to vehicular traffic and detouring traffic (ADT 2100 in 2020), for no more than 77 consecutive days (11 weeks) during the summer when school is not in session.

Utilities: There is one 2.5" diameter telephone utility conduit along the east fascia with all 3 brackets disconnected from parapet and conduit sagging up to 6". Utility poles are present adjacent to the bridge and roadway. Due to potential conflicts during construction and with the finished work, the utility poles may have to be relocated either temporarily or permanently or both.

Permits: TBD

Rights of Way: TBD

Current Schedule:

Design Approval: 10/14/2026

FDP: 5/24/28